SHAUN PETER WILKINSON

Teaching and Research Fellow

School of Biological Sciences, Victoria University of Wellington, P.O. Box 600, Wellington, NZ

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RESEARCH OBJECTIVE

I specialize in developing new molecular and computational methods for analysing environmental DNA (eDNA), with an emphasis on supervised machine learning classification and taxonomic identification.

EDUCATION

PhD in Ecology and Biodiversity **2011-2015**
School of Biological Sciences, Victoria University of Wellington, New Zealand
Thesis title: Intra-genomic variation in symbiotic dinoflagellates: recent divergence or natural hybridization?
Thesis adviser: Prof. Simon K. Davy

BSc (Hons) 1st Class in Marine Biology **2010**
School of Biological Sciences, Victoria University of Wellington, New Zealand
Thesis title: Virus ecology on a coral reef: the role of the physical environment.
Thesis adviser: Prof. Simon K. Davy
Grade Point Average: 9.0 (A+)

BSc in Applied Statistics and Marine Biology **2007-2009**
School of Biological Sciences, Victoria University of Wellington, New Zealand
Grade Point Average: 9.0 (A+)

RESEARCH EXPERIENCE

Postdoctoral Research Fellowship, Victoria University of Wellington **2016-2018**

- Awarded prestigious Rutherford Foundation Postdoctoral Fellowship
- Analysis of marine biodiversity and species boundaries in the Coral Triangle
- Development of new machine learning algorithms for eDNA analysis
- Development and release of four bioinformatic software packages
- Supervision of MSc student to completion with A+ grade
- Presentation at World Conference on Marine Biodiversity, Montreal, Canada

PhD, Victoria University of Wellington **2011-2015**

- Awarded VUW Vice Chancellor's Strategic PhD Scholarship
- Development of new molecular methods for single-cell analysis
- Several peer-reviewed publications and international conference presentations

Research intern, Victoria University of Wellington **2010-2011**

- Research internship at Victoria University Coastal Ecology Laboratory
- Development of capture-tag-recapture methods and models for juvenile fish
- Publication in peer-reviewed scientific journal

BSc (Hons), Victoria University of Wellington **2007-2010**

- Completed graduate courses in advanced computational statistics and biology
- Awarded A+ grades for all 24 undergraduate and honours-level courses
- Awarded A+ grade for thesis; graduated with first class honours
- Publication in peer-reviewed scientific journal

KEY RESEARCH SKILLS

- Biostatistics and informatics: highly proficient in the R programming language
- Molecular analysis: single-cell PCR, qPCR, high-throughput sequencing
- Experimental physiology: oxygen-flux analysis, fluorometry, microscopy, spectroscopy
- Technical skills: aquarium design, construction & maintenance, algal culturing, fish husbandry
- Scientific diving: surveys & experiments, including coral transplantation and fish tag-recapture
- Other: teaching; statistical consultation; laboratory management

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AWARDS

- Rutherford Foundation Postdoctoral Research Fellowship
- VUW Vice Chancellor's Strategic PhD Scholarship
- VUW PhD Submission Scholarship
- J.L. Stewart Scholarship
- VUW Faculty of Science Strategic Research Grant
- Dan F. Jones Scholarship in Science
- VUW Graduate Award
- Dr. FG Maskell Prize in Zoology
- Ministry of Fisheries Scholarship in Quantitative Marine Biology
- Studylink Bonded Merit Scholarship

TEACHING EXPERIENCE

- Lecturing for level 2 animal diversity and level 3 marine ecology (VUW, 2019)
- Lecturing levels 3 & 4 climate change biology and field research classes (VUW, 2013)
- Demonstrated level 3 marine animal physiology laboratory sessions (VUW, 2011)
- Delivered tutorial sessions for levels 1-3 statistics classes (VUW, 2010-2011)

OTHER RELEVANT QUALIFICATIONS

- New Zealand Full Driver's Licence
- Dayskipper Boating Qualification (New Zealand Coastguard)
- PADI Advanced and Rescue Diver Qualifications
- Divers Alert Network (DAN) Oxygen Delivery Certificate
- Medical Clearance for Occupational Diving
- St John Occupational First Aid Certificate

REFEREES

Professor Simon Davy
School of Biological Sciences
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Professor Shirley Pledger
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APPENDIX

PUBLICATIONS

Wilkinson SP (2019) aphid: an R package for analysis with profile hidden Markov models. *Bioinformatics*. DOI: 10.1093/bioinformatics/btz159

Gabay Y, Parkinson JE, **Wilkinson SP**, Weis VM, Davy SK (2019). Inter-partner specificity limts the acquisition of thermotolerant symbionts in a model cnidarian-dinoflagellate symbiosis. *The ISME Journal*. DOI: 10.1038/s41396-019-0429-5

Brian JI, Davy SK, **Wilkinson SP** (2019) Multi-gene incongruence consistent with hybridisation in *Cladocopium* (Symbiodiniaceae), an ecologically important genus of coral reef symbionts. *PeerJ Preprints.* 7:e27614v1

Brian JI, Davy SK, **Wilkinson SP** (2019) Elevated Symbiodiniaceae richness at Atauro Island (Timor-Leste): a highly biodiverse reef system. *Coral Reefs*. 38:123-136

Wilkinson SP, Brian JI, Pontasch S, Fisher PL, Davy SK (2018) Intra-genomic variation in *Symbiodinium* correlates negatively with photosynthetic efficiency and coral host performance. *Coral Reefs*. 37:691-701

Wilkinson SP, Davy SK (2018) phylogram: an R package for phylogenetic analysis with nested lists. *Journal of Open Source Software*. 3:790

Wilkinson SP, Davy SK, Bunce M, Stat M (2018) Taxonomic identification of environmental DNA with informatic sequence classification trees. *PeerJ Preprints.* DOI: 10.7287/peerj.preprints.26812v1

Oakley CA, Durand E, **Wilkinson SP**, Peng L, Weis VM, Grossman AR, Davy SK (2017) Thermal shock induces host proteostasis disruption and endoplasmic reticulum stress in the model symbiotic cnidarian *Aiptasia*. *Journal of Proteome Research*. 16:2121-2134

Hillyer KE, Dias DA, Lutz A, **Wilkinson SP**, Roessner U, Davy SK (2016) Metabolite profiling of symbiont and host during thermal stress and bleaching in the coral *Acropora aspera*. Coral Reefs 36:105-118

Wilkinson SP, Pontasch S, Fisher P, Davy SK (2016) The distribution of intra-genomically variable dinoflagellate symbionts at Lord Howe Island, Australia. *Coral Reefs*. 35:565-576

Wilkinson SP, Fisher PL, van Oppen MJH, Davy SK (2015) Intra-genomic variation in symbiotic dinoflagellates: recent divergence or recombination between lineages? *BMC Evol Biol*. 15:46

Thomas L, Kennington WJ, Stat M, **Wilkinson SP**, Kool JT, Kendrick GA (2015) Isolation by resistance across a complex coral reef seascape. *Proc R Soc B.* 282:20151217

Hawkins TD, Krueger T, **Wilkinson SP**, Fisher PL, Davy SK (2015) Antioxidant responses to heat and light stress differ with habitat in a common reef coral. *Coral Reefs.* 34:1229-1241

Lawrence SA, **Wilkinson SP**, Davy JE, Arlidge WNS, Williams GJ, Wilson WH, Aeby GS, Davy SK (2015) Influence of local environmental variables on the viral consortia associated with the coral *Montipora capitata* from Kaneohe Bay, Hawaii, USA. *Aquat Microb Ecol*. 74:251-262

Wilkinson SP (2015*) Intra-genomic variation in symbiotic dinoflagellates: recent divergence or natural hybridization?* Ph.D. Thesis. Victoria University of Wellington: New Zealand.

Hill R, Fernance C, **Wilkinson SP**, Davy SK, Scott A (2014) Symbiont shuffling during thermal bleaching and recovery in the sea anemone *Entacmaea quadricolor*. *Mar Biol*. 161:2931-2937

Shima JS, McNaughtan D, Geange SW, **Wilkinson S** (2012) Ontogenetic variation in site fidelity and homing behaviour of a temperate reef fish. *J Exp Mar Bio Ecol*. 416-417:162–167

Morar SR, Bury SJ, **Wilkinson SP**, Davy SK (2011) Sedimentary nitrogen uptake and assimilation in the temperate zooxanthellate sea anemone *Anthopleura aureoradiata*. *J Exp Mar Bio Ecol*. 399:110–119

CONFERENCES AND PRESENTATIONS

Presentation: "Taxonomic identification of eDNA with informatic sequence classification trees".
4th World Conference on Marine Biodiversity (WCMB) Montreal, Canada. 13-16 May, 2018.

Presentation: "Fishing for DNA on Coral Reefs".
TEDx Dili, Timor-Leste. 30 July 2017.

Presentation: "Intra-genomic variation in *Symbiodinium* correlates negatively with photosynthetic efficiency and coral host performance".
13th International Coral Reef Symposium (ICRS), Honolulu, Hawaii, USA. 19-24 June, 2016.

Presentation and honourable mention: "Hybridization in coral symbionts".
87th Australian Coral Reef Society Conference (ACRS), Sydney, Australia. 28-30 August, 2013.

Presentation: "The distribution and physiology of mixed *Symbiodinium* populations within high-latitude colonies of the reef-building coral *Pocillopora damicornis*".
7th International Symbiosis Society Congress (ISS), Krakow, Poland. 22-28 July, 2012.